REMARKS

Reconsideration of the outstanding Office Action dated May 21, 2002 is respectfully solicited.

The undersigned wishes to thank Examiner Cleveland for the thorough and courteous interview of August 29, 2002.

The present slate of claims was discussed with the Examiner. The new main claim 43 includes portions of the features of dependent claims 44, 47 – 50. The recitations of the original claim 43 and the dependent claim 44 were changed such that claim 43 no longer contains polymers and, for example; the materials polyester, polyurethane and cellulose in claim 44 were omitted. Accordingly, the dependent claims 47 – 50 were adapted to reflect these omissions.

Applicants respectfully traverse the rejections of Claims 43-56 under 35 U.S.C. 112, second paragraph. However, the rejections are rendered moot in view of the amendment of claims 43 and thus 44.

Applicants respectfully traverse the rejections of Claims 43-46, 48 and 50-56 under 35 U.S.C. 102(b) as anticipated by O'Meara et al. [U.S. 5682009, hereinafter '009]. Moreover, applicants respectfully traverse the rejection of Claim 47 over the '009 in view of Morse (U.S. 3,811,358) and the rejection of Claim 49 over the '009 in view of Lutz (U.S. 5,520,757).

Amended Claim 43 is novel as it does not recite coating materials listed in the cited prior art. In particular, the PTO's reference '009 recites certain substances, such as inert polymer, cellulose ester in conjunction with, for example, nitroglycerin in a dry form, are not recited in claim 43. These coating materials claimed according to the invention do not follow from the cited reference US Patent 5174837. In addition, the area of application for US 5174837 is totally different from that of the invention because the coating there is used for producing fragmented

propellant charges for ammunition without cases, and not as combustion moderator for influencing the temperature behavior. For the aforementioned reason alone, the coating materials disclosed in said reference are not suitable for the range of application(s) of the instant invention.

In addition to the foregoing relating to novelty, applicants note that the features according to the invention also meet the requirements with respect to inventive activity and unobviousness.

For example, the invention is distinguished over the cited references '358 and '757 when viewed jointly with '009 in that the non-energetic polymers, as well as deterrents such as poly glycidyl azide (GAP) of the invention on the whole have the effect of increasing the performance of the propellant charge. For this, only a small amount of this deterrent must be deposited on the propellant powder, so that no noticeable reduction in the energy content of the propellant powder takes place.

This advantage is discussed simply for informative purposes and with the aid of an exemplary embodiment on the enclosed information page, a graph entitled "Characteristic of Different Types of Propellant Powders" in comparison to the known prior art. Starting with the maximum operational gas pressure inside the weapon tube, the gas pressure curve for normal propellant powder, a shown with curve I, increases continuously. That is to say, in relation to the temperature, the gas pressure is correspondingly low for low temperatures and correspondingly high for high temperatures.

However, the invention considerably reduces the temperature gradient, so that while the charge is packed in, the charge weight can be adjusted during normal temperatures to higher gas-pressure values since only an insignificant temperature gradient of the charge must be taken into account for high temperatures. This can result in a noticeable increase in the performance at

normal temperature and in the low-temperature range. Depending on the firing temperature, the invention can result in an increase in the performance of 8 – 20%. This performance increase is shown in the exemplary embodiment with the blackened triangular area. In the same way, the invention also avoids a speed loss for the projectile because of the low temperature gradient and achieves an increase in the muzzle speed and, as a result of that, an increase in the target penetration capacity.

Starting with the reference '009 and viewing it together with the reference '358, the person skilled in the art considering seeking to control the temperature behavior in the desired manner, as well as the safety-technical characteristic data of the material so as to avoid a negative effect of the friction and impact sensitivity or the electrical charging capacity would not arrive at the required characteristic data and take into account risks concerning the operational safety during the production of these materials.

Thus, nitroglycerin and other nitric acid esters are no longer contained in the new claim 43 or in the remaining claims because of disadvantages resulting from its high impact sensitivity when used according to the invention. The U.S. Examiner's suggestions in Item 10 of the Office Action, relating to the cited reference '757 do not appear to be correct because the receptors in '757 are also combined with the impact-sensitive nitroglycerin in '009 and are therefore not suitable for use in accordance with the invention.

The use of polyester furthermore leads to a considerable lowering of the specific energy. For that reason, the object cannot be solved satisfactorily when using cellulose derivatives (polyester).

Owing to the fact that the materials according to the invention only migrate slightly or not at all and, in particular, do not cause noticeable performance reductions during the weapon

firing based on energy losses in the propellant powder and/or lead to a performance increase, these materials not only differ inventively from the materials in the cited references when solving the object, but also represent a uniform solution for the object because energy losses in the propellant powder are avoided during the weapon firing. As a result, the normal gas pressure can be increased considerably and a considerable performance reserve of the propellant powder can be exhausted, partially in approximation to the maximum gas pressure in the weapon tube.

Thus, in applicants' view, the claims are in condition for allowance. Should minor issues exist, the Examiner is invited to phone the undersigned.

Reconsideration and an early allowance are respectfully solicited.

Respectfully submitted,

Date: , 2002

Marina V. Schneller
Registration No. 26,032
VENABLE
P.O. Box 34385
Washington, D.C. 20043
(202)-962-4800 (phone)
(202)-962-8300 (fax)

MARKED UP VERSION OF CLAIMS AS AMENDED

-- 43.(Amended) A method for producing a propellant powder for gun ammunition, comprising

providing a mono-, di-, or tri-basic propellant, in the form of powder granules,

surface-treating said granules of a mono-, di-, and tri-basic propellant powder with at least one reagent selected from the group consisting of [nert polymer, energetic polymer, energetic monomer softener; and

recovering particles of said mono-, di-, and tri-basic propellant powder surface-treated with said reagent, wherein the recovered particles are in dry form] polyether, polyurea, polybutadiene, polyamide, poly-3-nitratomethyl-3-methyl oxetane, glycidylazide polymer, bis (2,2-dinitropropyl) acetal, bis (2,2-dinitropropyl) formal, dinitrodiazaalkane, alkyl nitrato ethyl nitramine, ethyl nitrato ethyl nitramine, and butyl nitrato ethyl nitramine.

--45. (Amended) The method of Claim [44] 43, wherein the propellant is at least one member selected from the group consisting of nitrocellulose, a nitric acid ester, an alkyl nitrato ethyl nitramine, nitroguanidine, hexogen, octogen, 3-nitro-1,2,4-triazol-5-one, and hexanitrohexaazaisowurtzitane.--

--51. (Amended) The method of Claim [50] 43 , wherein the surface-treating step comprises the step of applying [a polymer]said reagent, in the form of a solution or of an emulsion to the surface of said granules.--

--52. (Amended) The method of Claim 51, comprising spraying the granules in a rotating drum or incubating in an impregnating solution.--

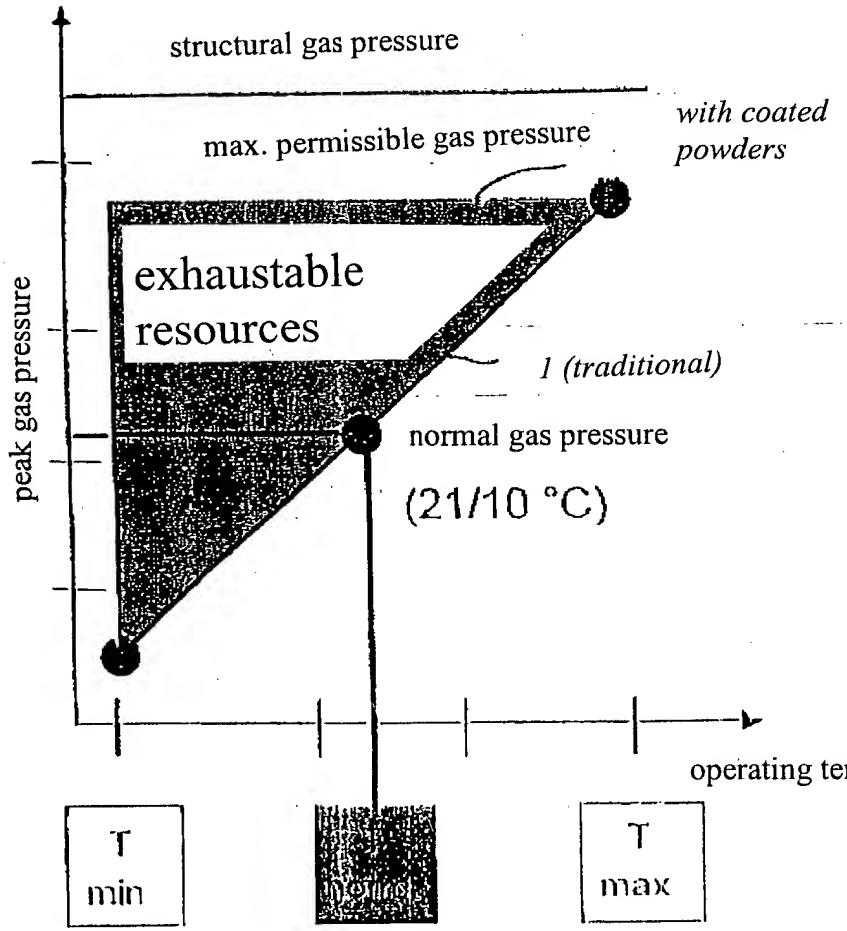
--53. (Amended) The method of Claim 43, wherein said reagent is[polymer and said energetic, monomer softener are]applied as a mixture of the two of said at least one reagent or by a two-stage, consecutive treatment. –

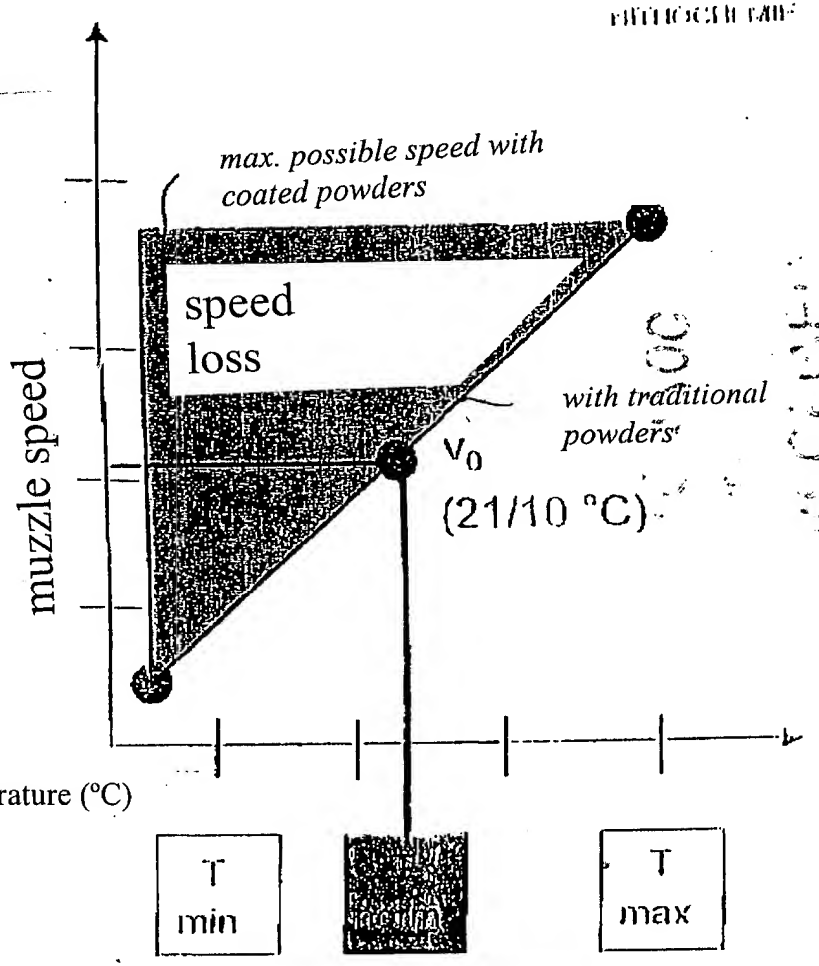
--54. (Amended) The method of Claim 43, wherein the powder granules are coated with said at least one reagent. --

--55. (Amended) The method of Claim 51, wherein said powder granules are coated with each of said at least one reagent.--

--56. (Amended) The method of Claim 53, wherein said powder granules are coated with each of said at least one reagent. --

Characteristics of different types of propellant powder





v08.ppt

18.08.01